

Ak-Chin Indian Community

UNIFIED WATERSHED ASSESSMENT

FOR THE

AK-CHIN INDIAN RESERVATION

Prepared by

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1.0 INTRODUCTION

The Ak-Chin Indian Reservation is located south of Phoenix, Arizona near Interstates 8 and 10 (Figure 1). The reservation contains 21,821 acres of Tribal lands and associated waterbodies within the Sonoran Desert. There are four washes with associated riparian areas, one tailwater pond, a Central Arizona Project (CAP) reservoir, and miles of CAP laterals. Photographs of selected waterbodies are presented in Appendix A.

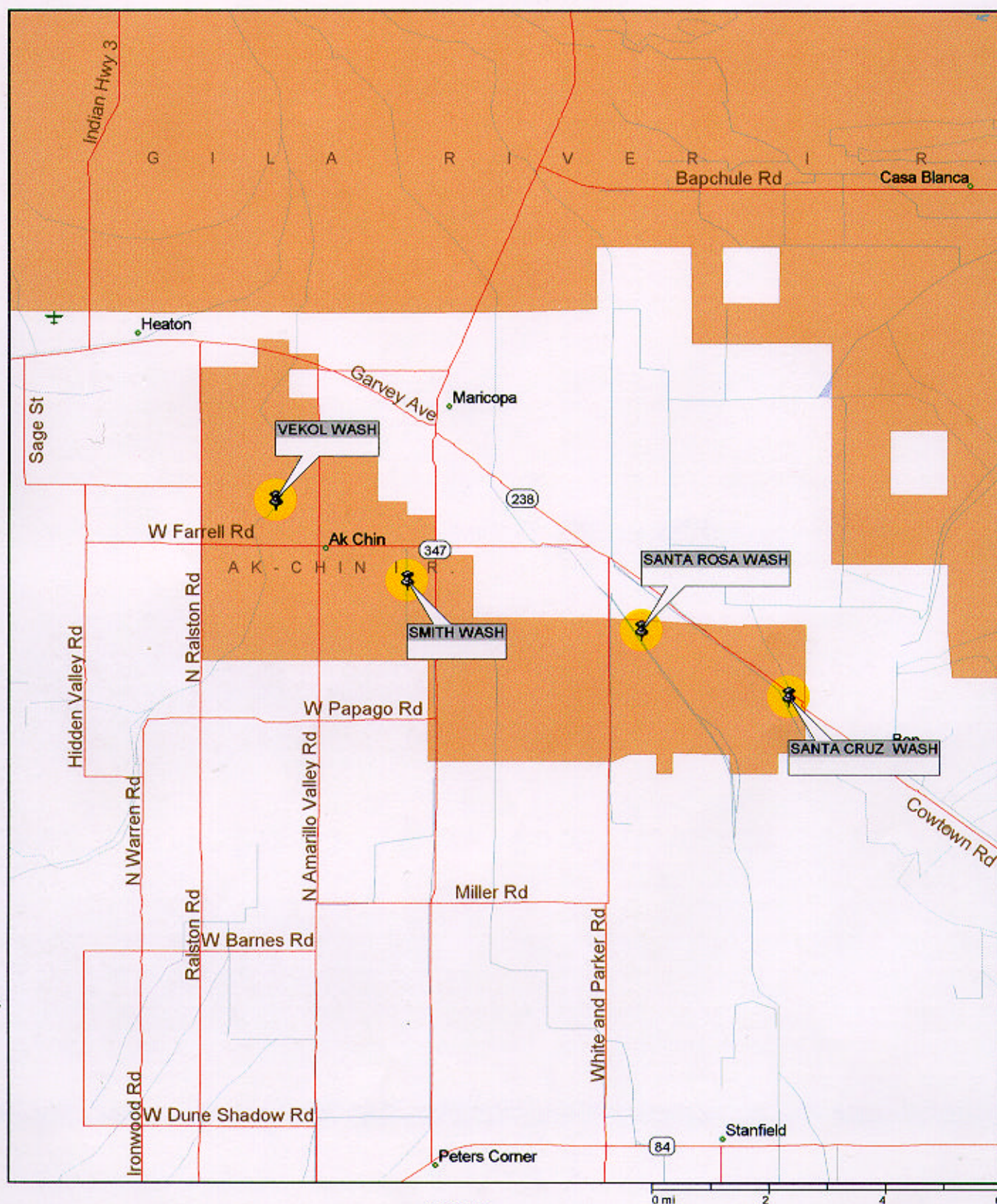
Ak-Chin is an O'odham word that means "mouth of the wash" or "place where the wash loses itself in the sand or ground". The term refers to a type of farming that depended on washes, the seasonal floodplains created by summer rains and winter storms. The Ak-Chin people employed this natural form of irrigation by planting downslope from a wash, allowing the floodwaters to "slide" over their plots of corn, beans, and squash. The Ak-Chin originally settled in the area centuries ago because of the good farming and presence of cultural plants associated with Vekol Wash.

This unified watershed assessment report is produced for the Ak-Chin Indian Reservation in response to the Clean Water Action Plan released by President William Clinton and Vice-President Albert Gore on February 19, 1998 (Environmental Protection Agency 1998). The Clean Water Action Plan requests Tribes and States to develop a unified watershed assessment (UWA) of waterbodies within areas of jurisdiction. The UWA is to be used to guide allocation of new federal funds to Tribes and States for watershed protection. The Clean water Action Plan calls for watersheds to be placed into one of four categories (Table 1).

Table 1. Watershed Categories for the Unified Watershed Assessment

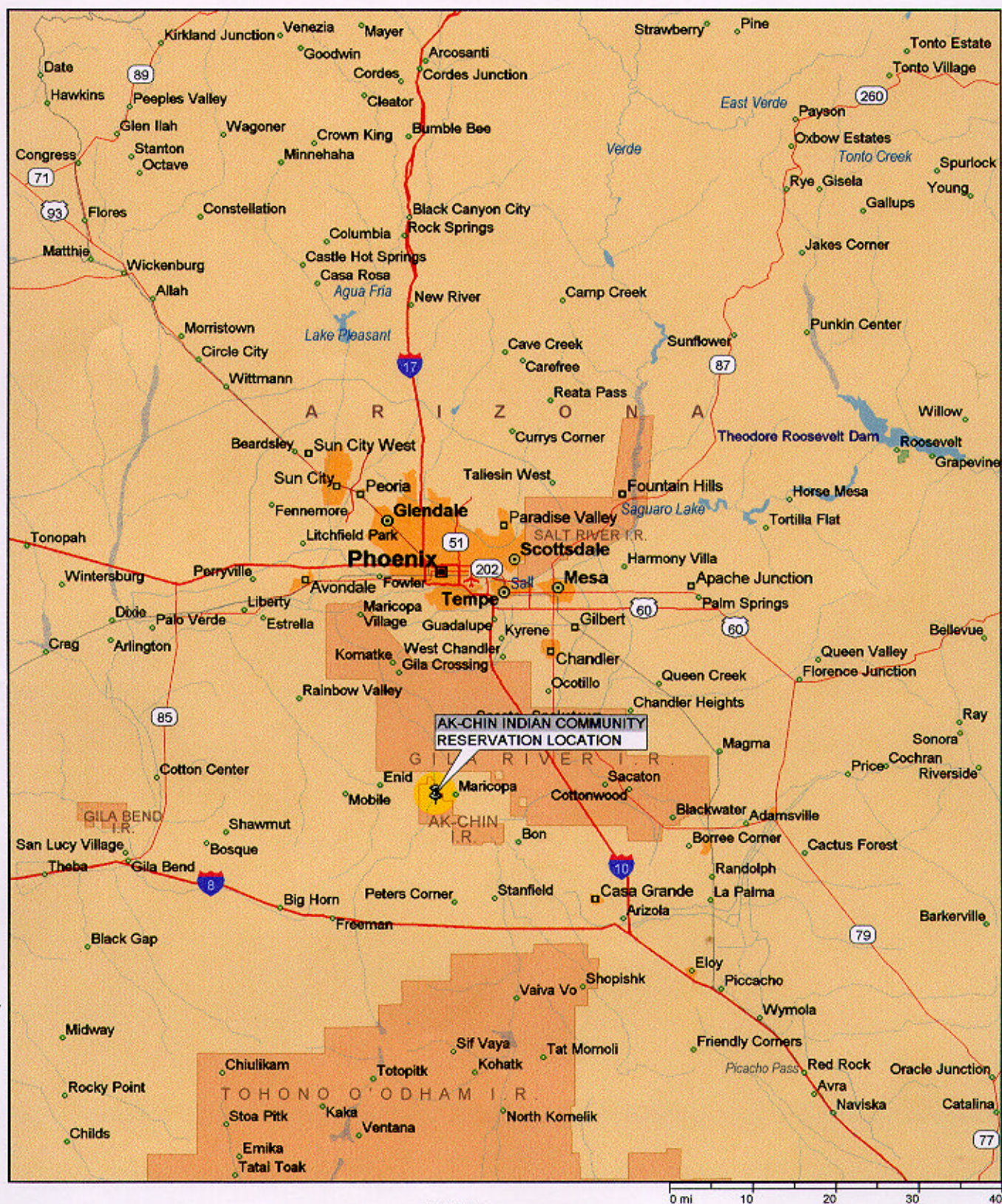
Category	Criteria
I	Watersheds in need of restoration due to impaired water quality or not meeting other natural resource goals
II	Watersheds with good water quality that meet all natural resource goals, but need preventive action to sustain water quality and aquatic ecosystems
III	Watersheds with pristine or sensitive areas that need an extra measure of water quality protection, but that are not impaired
IV	Watersheds where more information is needed in order to categorize them

AK-CHIN INDIAN COMMUNITY PRIMARY DRAINAGES



Microsoft Expedia
Streets98

FIGURE 1
AK-CHIN INDIAN COMMUNITY - LOCATION MAP



Microsoft Expedia

Streets98

The watershed protection framework builds on efforts to protect and restore water quality by developing site-specific, interdisciplinary programs focused on whole watersheds, or in the case of the Ak-Chin Indian Reservation, smaller watersheds, where human health concerns and ecological assessments indicate the strongest need for pollution control. The UWA acts to fulfill the commitment to meeting water quality goals by managing whole watersheds through development of cooperative watershed management plans which consider cumulative chemical, physical, and biological effects of human impacts watershed-wide.

The degradation of ground water and riverine systems as well as the extinction of the biodiversity associated with the stream wash-riparian system are evident on the reservation. Stream pollution, habitat degradation, and extinction of cultural plants are issues that will be addressed using the UWA approach to prioritize watershed restoration projects.

2.0 WATERSHED BOUNDARY, WATERSHEDS, AND MAJOR WATERBODIES

The watershed boundary system used in this assessment is based on the U.S. Geological Survey's hydrologic units. The Ak-Chin Indian Reservation land areas is within one watershed boundary, USGS hydrologic unit number 15070101 for Vekol Wash in the Gila River Basin (USGS 1998). The Ak-Chin Indian Reservation contains four smaller watersheds, which will be used in this assessment report to aid in prioritizing restoration projects within category I watersheds. The four watersheds on the reservation are as follows:

- Vekol Wash Watershed
- Smith Wash Watershed
- Santa Cruz Watershed
- Santa Rosa Watershed

Major waterbodies on the Ak-Chin Indian Reservation are as follows:

- CAP (Central Arizona Project) Laterals
- CAP Reservoir
- Santa Cruz Wash
- Santa Rosa Wash
- Smith Wash
- Tailwater Pond
- Vekol Wash

As stated above, this UWA report will assess waterbodies within each of the four watersheds on the Ak-Chin Indian Reservation as opposed to assessing waterbodies within a single watershed using the USGS' Gila River Basin.

3.0 CRITERIA FOR CATEGORIES I-IV WATERSHEDS

Criteria established for determining categories I through IV watersheds are presented in Table 2.

Evaluations used to determine beneficial use impairment are based on the best professional judgement of the Director of the Ak-Chin Environmental Protection Department and the Director (cultural advisor) of the Ak-Chin Him-Dak Museum. Evaluations to determine ground water vulnerability are based on field reconnaissance, USGS studies (Hollett 1994; Marie and Hollett 1996; Wilson 1979), and over ten years of ground water quality data on stock wells and Tribal public water system wells (Stantech Consulting, Inc. 1997). Evaluations of the pristine nature or aquatic system sensitivity of a waterbody are based on the best professional judgement of the Director of the Ak-Chin Environmental Protection Department.

All four watersheds on the reservation were assessed with respect to water quality impairment of waterbodies. Sufficient data were either available or obtained through personal conversations with knowledgeable Tribal employees staff and field reconnaissances accompanied by Tribal employees.

Table 2. Criteria for Establishing Category I through IV Watersheds

Category	Criteria to Establish Category
I	Watershed has impaired beneficial uses (based on best professional judgement of the Ak-Chin Environmental Protection Department Director) or Watershed identified as needing improvements in protecting cultural beneficial uses (based on best professional judgement of the Ak-Chin Him-Dak Museum Director) or Watershed contributes to impairment of ground water used as a public water source (based on EPA Drinking Water Section data on public water systems and best professional judgement of the Ak-Chin Environmental Protection Department Director)
II	Sufficient information is available to make a determination that the watershed is not impaired, does not need improvements in protecting cultural uses, and does not contribute to impairment of ground water used as a public water system (based on best professional judgement of the Ak-Chin Environmental Protection Department Director and the Ak-Chin Him-Dak Museum Director)
III	Watershed contains exceptionally pristine water quality (based on best professional judgement of the Ak-Chin Environmental Protection Department Director) or Watershed contains sensitive aquatic system conditions (based on best professional judgement of the Ak-Chin Environmental Protection Department Director) or Watershed contains drinking water sources (based on EPA Drinking Water Section data on public water systems and best professional judgement of the Ak-Chin Environmental Protection Department Director)
IV	Insufficient data on watershed are available to make a water quality assessment

4.0 THE UNIFIED WATERSHED PROCESS AND RANKING SYSTEM

The UWA process developed for the Ak-Chin Indian Community involves a joint effort between the Director of the Ak-Chin Environmental Protection Department and the Director (cultural advisor) of the Ak-Chin Him-Dak Museum. The development of the assessment is based on the following understanding: (1) the UWA is to be used to acquire new federal funding under Clean Water Act Sections 106 and 319; (2) the UWA does not contain regulatory enforcement actions; and (3) the UWA is a dynamic document that is subject to modification and improvements and better or more complete information becomes available.

The UWA process was initiated by the Ak-Chin Environmental Protection Department on February 1999 and involved five steps: (1) reviewing water quality and land use literature for the Ak-Chin Indian Reservation and surrounding watershed areas, (2) meeting with the Director (cultural advisor) for the Ak-Chin Him-Dak Museum, (3) meeting with the Ak-Chin Water Master, (4) conducting a reconnaissance of Tribal waterbodies, and (5) conducting a water quality impairment evaluation for each waterbody.

The UWA evaluation identified indicators of water quality impairment and non-support of beneficial uses for each waterbody (Table 3). The ranking system presented in Table 3 was then used to determine the extent of impairment to each waterbody.

Table 3. Ranking System for Waterbodies with Water Quality Impairment

Rank	Ranking Criteria	Evaluation Parameters
1 point	...for each indicator causing water quality impairment to a waterbody	<u>Indicators</u> <ul style="list-style-type: none"> • Agricultural Return Flows • Cultural Plant Loss • Fish Consumption Advisory • Ground Water Vulnerability • Occurrence of Hydrocarbons in Ground Water • Occurrence of Pesticides in Ground Water • Plant Diversity Loss • Riparian Habitat Loss • Stream Channelization • Unknown Toxicity of a Toxicant • Watershed Nitrogen Export • Wildlife Consumption Advisory
2 points	...for each beneficial use that is determined to be non-supported in the waterbody	<u>Beneficial Uses</u> <ul style="list-style-type: none"> • Agricultural Irrigation • Agricultural Livestock Watering • Aquatic & Wildlife (ephemeral) • Aquatic & Wildlife (warmwater) • Cultural/Ceremonial • Domestic Water Source • Fish Consumption • Full Body Contact • Partial Body Contact

5.0 CRITERIA FOR PRIORITIZING CATEGORY I WATERBODIES

The unified watershed assessment process followed for the Ak-Chin Indian Reservation consists of two major steps: (1) categorize each watershed into one of four categories, and (2) prioritize those watersheds in category I based on needed protection and restoration of impaired waterbodies.

The Ak-Chin Indian Community approach for prioritizing category I watersheds is to arrive at a consensus of restoration priority between the Director of the Department of Environmental Protection and the Director of the Ak-Chin Him-Dak Museum. The prioritization process included considerations of: (1) the most needed restoration projects, (2) ranking scores for each waterbody, and (3) projects capable of being completed by the end of federal fiscal year 2000 (i.e., September 30, 2000).

Table 4 lists the ranking of the water quality impaired waterbodies on the Ak-Chin Indian Reservation as well as the restoration priority of each category I watershed. Watershed restoration priorities used in the Table 4 are *high*, *medium*, and *low*. Only watershed projects with a high priority have been selected for implementation during the federal fiscal year 2000.

Table 4. Water Quality Impaired Waterbodies List

Waterbody Name	Length or Area	Watershed	Indicator	Beneficial Use Non-Support	Ranking Score	Restoration Priority
Vekol Wash	~5.8 miles	Vekol Wash Watershed	-agricultural return flows -groundwater vulnerability -plant diversity loss -riparian habitat loss -stream channelization -watershed nitrogen export (6 points)	-cultural/ceremonial -aquatic & wildlife -partial body contact (6 points)	12	HIGH
Smith Wash	~6.1 miles	Smith Wash Watershed	-agricultural return flows -groundwater vulnerability -plant diversity loss -riparian habitat loss -stream channelization -watershed nitrogen export (6 points)	-cultural/ceremonial -aquatic & wildlife -partial body contact (6 points)	12	HIGH
Santa Cruz Wash	~2.2 miles	Santa Cruz Wash Watershed	-agricultural return flows -groundwater vulnerability -plant diversity loss -riparian habitat loss -stream channelization -watershed nitrogen export (6 points)	-cultural/ceremonial -aquatic & wildlife -partial body contact (6 points)	12	HIGH
Santa Rosa Wash	~3.3 miles	Santa Rosa Wash Watershed	-agricultural return flows -groundwater vulnerability -plant diversity loss -riparian habitat loss -stream channelization -watershed nitrogen export (6 points)	-cultural/ceremonial -aquatic & wildlife -partial body contact (6 points)	12	HIGH
CAP Laterals	unknown but extensive	All four Watersheds	-unknown toxicity of a toxicant (1 point)	none	1	LOW
CAP Reservoir	~10 acres	Vekol Wash Watershed	-unknown toxicity of a toxicant (1 point)	none	1	LOW
Tailwater Pond	~acres	Vekol Wash Watershed	-agricultural return flows -groundwater vulnerability (2 points)	-full body contact -aquatic & wildlife (4 points)	6	MEDIUM

6.0 WATERSHED RESTORATION PROJECT RECOMMENDATIONS

The following five restoration projects are recommended for the Ak-Chin Indian Reservation.

Project #1: Creation of a Cultural Plant Reestablishment Area

Project #2: A constructed wetland to treat the tailwater inflow to the Tailwater Pond

Project #3: Implementation of agricultural BMPs to treat the tailwater inflow to washes

Project #4: Implement BMPs to reduce or eliminate contaminated recharge water to aquifers

Project #5: Reestablishment or enhancement of riparian corridors along washes

7.0 REFERENCES CITED

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APPENDIX A

PHOTOGRAPHS OF TRIBAL WATERBODIES



1. Tailwater Pond on the Ak-Chin Indian Reservation. Beneficial uses include swimming, aquatic & wildlife (warmwater), fish consumption, and recharge to domestic water source.



2. Abandoned stock well on the Ak-Chin Indian Reservation with livestock pens and holding pens in the background. Stormwater runoff ponds around wellhead and enters the underlying aquifer through an opening in the foreground of the photograph. Groundwater sampling of well indicated a nitrate concentration of 19.0 mg/L as N on April 18, 1997.



3. Upper Vekol Wash looking downstream, just inside the Ak-Chin Indian Reservation. Note eroding fill on the left bank (left portion of photograph). Vekol Wash is identified as having a degraded cultural use as a result of lost habitat and reduction or elimination of wetland plants of cultural significance.



4. Santa Rosa Wash upstream of the Ak-Chin Indian reservation. Note manure dumped in wash from feedlot operation (center of photograph).
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